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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/547,273	04/11/2000	Glenn Clement Aikens	RSW9-2000-0024-US1	4966
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IBM CORPORATION 3039 CORNWALLIS RD. DEPT. T81 / B503, PO BOX 12195 REASEARCH TRIANGLE PARK, NC 27709			EXAMINER PRIETO, BEATRIZ	
			ART UNIT	PAPER NUMBER
			2142	

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/547,273

**Applicant(s)**

AIKENS ET AL.

**Examiner**

Prieto B.

**Art Unit**

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,11,12 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 is/are allowed.
- 6) ☒ Claim(s) 1,4-7,11 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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***DETAILED ACTION***

1. This communication is in response to Amendment filed 07/25/05, whereby claims 1, 4, 6, 7, 12, 19 have been amended and claims 2-3, 8-10, 13-18 have been canceled, claims 1, 4-7, 11-12 and 19 remain pending and have been examined.
2. Claim 12 is allowed.

***Claim Rejections 35 U.S.C. § 103***

3. Quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action may be found in previous office action.
4. Claims 1, 4-5, 7, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brichta (US 5,864,483) in view of McKnight (US 6,557,035) in further view of Sweet et. al. (US 6,836,800) (Sweet hereafter).

Regarding claim 1, computer implementation method (col 9/lines 28-34) of monitoring network performance services (col 1/lines 37-50), having established performance requirements criteria by the provider or customers (col 1/lines 10-19, 61-65);

monitoring a network performance measurement on a recurring basis to obtain samples of the metric value (Brichta, samples: col 3/lines 36-49, monitoring: col 3/line 54-56, col 6/lines 67-col 7/line 5, and metric values obtained on recurring basis: col 7/lines 15-37);

determining a "trend" value in actual services based on obtained samples of the metric (Brichta: identify patterns, col 2/lines 20-39, col 8/lines 60-63), said determining step including the further steps of:

analyzing a set of samples collected over a predetermined sampling time for determining for each occurrence of the sample whether the analyzed sample satisfies a predetermined level (i.e. a sample "set" size, col 2/lines 2-17, predetermined acceptable values col 3/lines 60-67, sample population rolling "over time" time period, col 7/lines 30-37, determine whether the analyzed sample satisfies a predetermined level over time, col 9/lines 16-27);

determining predetermined sample criteria including an upper and lower control limits associated with said metric value (Brichta: col 7/lines 6-49) and determining whether the number of occurrences in the sample population set satisfy a predetermined sample criteria, said predetermined criteria compares

the number of occurrences with an expected number of occurrences (Brichta: col 2/lines 34-39, col 1/lines 64-col 2/line 2); however, Brichta does not teach use linear regression to determine said trend nor the time when the services will not meet a performance requirements when determined trend continues.

McKnight teaches obtaining samples of metric values and determining a trend based on the obtained samples of metric values using linear regression (abstract), specifically, monitoring performance parameters (e.g. network performance parameters col 2/lines 13-20) over a period of time to obtain averages of measured network performance parameters, using linear regression analysis to determine a trend in the computed averages (col 2/lines 21-27), including samples obtained over a recurring period of time (col 5/lines 57-67); and determining the time at which services will not meet a predetermined performance requirement when the trend continues (Fig. 6, col 1/lines 1-10, 16-29); however McKnight does not teach added limitation, i.e. determining if a minimum number of samples are met within a sample set.

Sweet teaches terminating the step of determining a trend (i.e. signature detection technique) if a set of samples fails to meet a predetermined sample criteria, such as requiring a minimum number of samples (col 8/lines 43-60).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given Brichta's teachings for predicting the time when the current trend in the network performance will exceed a defined threshold including analyzing occurrences of a stable sample set population, the teachings of McKnight for predicting when network performances with exceed predetermined thresholds, would be readily apparent. Motivation to combine the references teachings would be accurately diagnose system hardware bottlenecks, for longer-term trends preventing or decreasing adverse identified effects such as improper system design, improper software configuration, or excessive usage of human resources, noted by McKnight, using stabilized a sample population sets that eliminate occurrences in said sample that reflect anomalies, deriving trends based on samples attributable to "normal" or "common" causes. One of ordinary skill would further be motivated to include the teachings of Sweet, motivation would be because in doing so an effective detection of a periodic pattern, i.e. trend is obtained using a well known sampling theorem, as taught by Sweet, further applicable to any point the network, as noted by Sweet.

Regarding claim 4, determining whether the standard deviation of the set is greater than a predetermined amount or proportion "percentage" of the mean of the sample (Brichta: col 10/lines 30-40, and *average of the mean and standard deviation* col 2/lines 18-38).

Regarding claim 5, generating an alert if the performance violation time is predicted to fall within a fixed time window beginning at the current time (Brichta: providing an alert, see col 1/lines 61-64 and col 9/lines 11-15, a predetermined criteria e.g. response time, turnaround time indicated that performance violation time specifies control values of a fixed time window, see col 5/lines 64-col 16/line 14 and performance time falling outside the fixed window (Brichta: col 7/lines 38-49)

Regarding claim 7, comprises limitations discussed on claim 1, same rationale of rejection is applicable. Further limitations include the steps of:

- monitoring the provided service to obtain periodically or at predefined periods, i.e. on a recurring basis, sets of network performance samples representing actual network performance (Brichta samples: col 3/lines 46-49, actual network performance: col 3/line 54-56 monitoring: col 6/lines 67-col 7/line 5, recurring: col 7/lines 29-37);

- using only the obtained sets of samples having the minimum requirement number of samples (Sweet: col 8/lines 43-60) and linear regression (McKnight: col 2/lines 13-27) to generate a mathematical representation of a pattern or trend value in the network performance represented by obtained network performance measurements or metric (Sweet: signature value performance col 8/lines 43-60 and McKnight: col 2/lines 13-27);

- calculating predefined statistical parameters of each obtained set of samples, (e.g. mean and standard deviation) (Brichta col 7/lines 15-37) and determining a standard deviation ratio value of the predefined statistical parameters (Sweet: col 5/lines 17-20, step 3020 of fig. 5);

- determining whether the ratio value calculated statistical parameter meet predefined threshold requirement value (Sweet: col 5/line 21-22, step 3040 of Fig. 5);

- terminating the step of generating a mathematical representation of a trend in the network performance metric when the calculated statistical parameter for obtained set of samples fails to meet the predefined threshold requirement (Brichta: eliminating the occurrences of sample of metric values that do not satisfy said predetermined a criteria, i.e. not using analyzing any of theses occurrences or using these occurrences for further calculations col 11/lines 2-32);

- using a mathematical representation (Fig. 6) predicting the time when the network performance metric will exceed a defined threshold if the trend continues (McKnight: col 1/lines 1-10, 16-29).

- generating an alert if the predicted future time (elapsed time) is within a fixed future time window (predetermined time) from the current time (Brichta alert: col 9/lines 11-15).

Regarding claim 11, the calculated statistical parameters comprise the standard deviation and mean of the set of samples (Brichta: col 7/lines 17-28) and the predefined threshold requirement requires that the standard deviation be no greater than a predetermined amount above (percentage) the mean (Brichta: col 2/lines 23-27, col 1/lines 46-49).

Regarding claim 19, this claim comprises the article of manufacture comprising a computer useable medium having a computer readable program embodied in said medium, wherein the computer readable program when executed in the computer causes the computer to perform the method discussed on claim 1 and the system discussed on claims 7, same rationale of rejection is applicable.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brichta-McKnight in view of Sweet in further view of Baumann et. al. (Baumann) U.S. Patent No. 5,469,148.

Regarding claim 6, trend based on the obtained samples of metric values using linear regression monitoring actual service performance parameters (McKnight: abstract and col 2/lines 13-20), and determining that the performance time falls outside the a time window (Brichta: col 7/lines 38-49, exceeding unacceptable levels, i.e. outside col 2/lines 33-39, criteria specifies a minimum and maximum, i.e. col 3/lines 60-67), including determining where the calculated upper and lower control limit to determine occurrences outside a range (col 7/lines 38-42), however the above-mention prior art does not teach canceling a previously generated alert when a performance time will not met a time window criteria.

Baumann teaches a monitoring mechanism configured to canceling a previously generated error signal in absence of the occurrence that a performance violation time has occurred within a fixed period of time (col 1/lines 1-9, 39-58, cancel the alarm signal, col 5/lines 7-17);

It would have been obvious to one ordinary skilled in the art at the time the invention was made to include means for canceling a previously generated error signal in absence of the occurrence that a performance violation time has occurred within a fixed period of time, as taught by Baumann, or to further cancel a previously generated alert in the absence of a prediction that the performance violation time will fall outside the fixed time window, as taught by Brichta. Motivation would be to ensure that only deviation in performance occurring over a predetermined period of time are reported before engaging in corrective measures, as suggested by Baumann.

### *Response to Arguments*

6. Regarding claim 1 rejected over Britcha in view of McKnight it is argued (p. 7 of remarks), the applied prior art does not teach claim limitation as amended. Specifically, does not teach a criteria requiring a predetermined minimum number of samples in the set of samples and terminating the step of determining a trend if the required minimum number of samples is not met.

In response to the above-mentioned argument, applicant's interpretation of the applied references have been fully considered. However, Britcha teaches where "each occurrence is collected and processed to generate descriptive statistical information, including, mean, standard deviation, a sample size, an upper control limit and lower control limit for various criteria (col 2/lines 2-10); for each criteria the statistical information (e.g. sample size) specify whether unacceptable levels are approaching where the provider can take appropriate action if the services exceed the unacceptable levels (col 2/lines 10-17); each occurrence in the sample population may have an associated value for each characteristic (col 3/lines 36-4); each predetermined criterion specifies a *quality control limit for the value* associated with a characteristic of an occurrence, a criterion may specify a *minimum* and maximum acceptable value (col 3/lines 60-67). Argument that prior art does not teach a criteria requiring a predetermined minimum number of samples in the set of samples and taking action if the required minimum number of samples is not met, is not persuasive.

Sweet teaches terminating the step of determining a trend (i.e. signature detection technique) if a set of samples fails to meet a predetermined sample criteria, such as requiring a minimum number of samples (col 8/lines 43-60). Arguments that the applied prior art does not teach a criteria requiring a predetermined minimum number of samples in the set of samples and terminating the step of determining a trend if the required minimum number of samples is not met, are not persuasive.

7. Regarding claim 7 rejected over Britcha in view of McKnight it is argued (p. 9 of remarks), the applied prior art does not teach claim limitation as amended. Specifically, does not teach determining a ratio of the standard deviation and the statistical means for the entire set, and comparing the determined ratio value to a predetermined threshold requirement.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "determining a ratio of the standard deviation and the statistical means for the entire set") are not recited in the rejected claim 7 as amendment file 7/25/09. Although the claims are interpreted in light of the specification, limitations from

the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

8. Regarding claim 7 rejected over Britcha in view of McKnight it is argued (p. 9 of remarks), the applied prior art does not teach claim limitation as amended. Specifically, does not teach terminating the step of generating a mathematical representation of a current trend in the network performance metric if the ratio of the calculated statistical parameters for an obtained set of samples fails to meet the predefined threshold.

In response to the above-mentioned argument, Britcha teaches where each occurrence is collected and processed to generate descriptive statistical information, including, mean, standard deviation, a sample size, an upper control limit and lower control limit for various criteria (col 2/lines 2-10); for each criteria the statistical information specify whether unacceptable levels are approaching where the provider can take appropriate action if the services exceed the unacceptable levels (col 2/lines 10-17); calculating a ratio of the calculated statistical parameters for an obtained set of samples to determine if it meets a predefined threshold, e.g. a chi-square calculation, i.e. “a ratio of calculated statistical parameters” (see formula on column 4), and determining if the calculated ratio met a predetermined threshold, within e.g. danger zone or within a non-danger zone, i.e. outside a danger zone (col 2/lines 18-39). The broadness of the claimed term “ratio of predefined statistical parameters” reads on the ratio of any parameters (not requiring the ration of the standard deviation and the statistical means, as argued on p. 9), specifically, the ratio any statistical parameters, e.g. the frequency of occurrences, as cited portions of the Britcha reference. Arguments that the prior art does not teach terminating the step of generating a mathematical representation of a current trend in the network performance metric if the ratio of the calculated statistical parameters for an obtained set of samples fails to meet the predefined threshold.

9. Regarding claim 4 rejected over Britcha in view of McKnight it is argued (p. 10 of remarks), the applied prior art does not teach claim limitation as amended. Specifically, does not teach determining whether the standard deviation of the set is greater than a predetermined percentage of the mean of the set of samples.

In response to the above-mentioned argument, applicant’s interpretation of the applied prior art has been noted. Claim clause has been applied the broadest reasonable interpretation inlight of the specification (see MPEP 2111). In this case, a standard deviation of the set of samples greater than a predetermined value of the mean of the set of samples. However, Britcha teaches the use of a statistical calculation, e.g.  $X^2$  calculation, to identify a predetermined threshold (e.g. a specific range associated with

the set of samples, i.e. occurrences). Specifically, a zone, e.g. as 1.5 standard deviations above a mean, can be identified or defined using the mean and standard deviation, e.g. a two month rolling "*average of the mean and standard deviation*" (col 2/lines 18-38). It is noted that standard deviation value above a mean value, represents a standard deviation value above or greater than an average value, specifically and average of the mean. Thereby, the applied prior art teaches a standard deviation of the set of samples greater than a predetermined value of the mean of the set of samples.

10. Applicant's arguments filed 7/25/09 have been fully considered but not found persuasive.

11. Allowable subject matter has been noted above, applicant is urged to accordingly, place all based claims in similar form.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Reply to a final rejection or action must include cancellation of, or appeal from the rejection of, each rejected claim. If any claim stands allowed, the reply to a final rejection or action must comply with any requirements or objections as to form (see 1.113). If prosecution in an application is closed, an applicant may request continued examination of the application by filing a submission and the fee set forth in § 1.17(e) prior to the earliest of: (c) A submission as used in this section includes, but is not limited to, an information disclosure statement, an amendment to the written description, claims, or drawings, *new arguments*, or *new evidence in support of patentability*. If reply to an Office action under 35 USC 132 is outstanding, the submission must meet the reply requirements of § 1.111 (see MPEP 706.07).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prieto, B. whose telephone number is (571) 272-3902. The Examiner can normally be reached on Monday-Friday from 6:00 to 3:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, Andrew T. Caldwell can be reached at (571) 272-3868. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800/4700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system, status information for published application may be obtained from either Private or Public PAIR, for unpublished application Private PAIR only (see <http://pair-direct.uspto.gov> or the Electronic Business Center at 866-217-9197 (toll-free).

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Primary Examiner  
September 29, 2005

  
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